

Marquette University

e-Publications@Marquette

College of Nursing Faculty Research and
Publications

Nursing, College of

7-2022

Acquiring, Applying and Retaining Knowledge Through Debriefing for Meaningful Learning

Anne Loomis
Purdue University

Kristina Dreifuerst
Marquette University, kristina.dreifuerst@marquette.edu

Cynthia Sherraden Bradley
University of Minnesota

Follow this and additional works at: https://epublications.marquette.edu/nursing_fac



Part of the [Nursing Commons](#)

Recommended Citation

Loomis, Anne; Dreifuerst, Kristina; and Sherraden Bradley, Cynthia, "Acquiring, Applying and Retaining Knowledge Through Debriefing for Meaningful Learning" (2022). *College of Nursing Faculty Research and Publications*. 935.

https://epublications.marquette.edu/nursing_fac/935

Marquette University

e-Publications@Marquette

Nursing Faculty Research and Publications/College of Nursing

This paper is NOT THE PUBLISHED VERSION.

Access the published version via the link in the citation below.

Clinical Simulation in Nursing, Vol. 68, (2022): 28-33. [DOI](#). This article is © Elsevier and permission has been granted for this version to appear in [e-Publications@Marquette](#). Elsevier does not grant permission for this article to be further copied/distributed or hosted elsewhere without the express permission from Elsevier.

Acquiring, Applying and Retaining Knowledge Through Debriefing for Meaningful Learning

Kristina Dreifuerst

Marquette University College of Nursing, Milwaukee, WI

Ann Loomis

Purdue University School of Nursing, Johnson Hall of Nursing, West Lafayette, IN

Cynthia Bradley

University of Minnesota School of Nursing, Minneapolis, MN

Abstract

Acquiring, Retaining and Applying Knowledge Through Use of Debriefing for Meaningful Learning (DML).

Background

Developing competence in nursing care is a critical expectation of nursing students. Knowledge acquisition, application and retention are the primary building blocks of competence. DML debriefing offers an opportunity to ensure that students master critical components of nursing they might not otherwise learn and to remove epistemological roadblocks to knowledge development.

Methods

Eighty-two traditional prelicensure baccalaureate nursing students from a single school participated in the study. This quasi-experimental pretest, posttest study explored the impact of the use of Debriefing for Meaningful Learning compared with customary debriefing on the development of knowledge about care of the patient with a neurologic condition and knowledge retention 4 weeks later.

Results

There was a significant difference in knowledge acquisition, knowledge retention, with DML compared to customary debriefing.

Conclusions

These findings are significant for nurse educators using simulation to potentiate clinical competence in prelicensure students and add to the growing evidence regarding the impact of debriefing.

Keywords

Competency, Debriefing, Debriefing for Meaningful Learning, Knowledge Application, Knowledge Retention

Background

Educating students to become competent clinicians capable of providing quality and safe patient care is the mission of all nursing programs. This issue remains at the forefront of the health care system even as the chasm between patient safety and quality of care continues to grow. Securing clinical experiences in which students can actively engage with patients to hone clinical skills, utilize clinical judgment and clinical reasoning, foster therapeutic communication, and enhance interdisciplinary practices is increasingly difficult (O'Brien, McNeil, & Dawson, 2019; Taylor, Angel, Nyanga, & Dickson, 2017; Van Wyngaarden, Leech, & Coetzee, 2019). This presents challenges for educators as nursing shifts to a competency-based curriculum to ensure that graduate nurses achieve the competencies necessary to enter professional practice (AACN, 2021).

To that end, educators are required to provide a comprehensive range of clinical situations to students, ensuring introduction to the safe execution of skills, clinical reasoning and decision-making that nurses must possess in practice. To demonstrate competence, student nurses must acquire a knowledge base they can apply to patient situations and anticipate how to use that knowledge in the care of future patients (Cowen, Hubbard, & Hancock, 2018). While practical learning experiences have historically occurred in traditional clinical rotations, these are increasingly limited due to shorter lengths of patient stays, unpredictable unit occupancy rates, increased patient acuity, and limited available educators to supervise students during clinical rotations (Fang, Keyt, & McFadden, 2021; Henry & West, 2019). Therefore, nurse educators are challenged to develop new teaching methods to educate and train students to care for a diverse patient population in a rapidly changing health care environment (Gillson & Cherian, 2019). Because students and novice nurses pose inherent safety risks to patients due to limited experience applying knowledge and skills in clinical situations, simulation learning experiences are used increasingly to ensure human patient safety (Aebbersold, 2018; Beauvais & Phillips, 2020). Simulation is an educational pedagogy that provides consistent clinical opportunities for students to experience contextual patient care in a controlled environment, to ensure that patient safety and learning occur simultaneously, and students can achieve competency (Lioce et al., 2020).

When simulation includes quality debriefing, students have an opportunity to master critical components of nursing that they might not otherwise experience, and epistemological roadblocks to knowledge acquisition are removed (Cheng et al., 2016).

Strong debriefing methods cultivate a deliberate and interactive dialogue to enhance student learning outcomes and make sense of their learning experience (Dreifuerst, 2015). The need for structured debriefing facilitated by trained educators is a regulatory recommendation by nursing bodies (Alexander et al., 2015; Decker et al., 2021). One structured debriefing method, Debriefing for Meaningful Learning (DML), has demonstrated improved clinical reasoning and clinical judgment among prelicensure nursing students (Dreifuerst, 2012; Forneris et al., 2015; Mariani, Cantrell, Meakim, Prieto, & Dreifuerst, 2013). DML is a theoretically derived and evidence-based method in which trained debriefers engage learners in a reflective discussion using Socratic questioning to expose and evaluate the relationship between their thinking and actions (Dreifuerst, 2015). Debriefers guide learners through reflection-in-action, reflection-on-action, and reflection beyond action to foster assimilation and accommodation of concepts that can be applied to future clinical encounters (Bradley, Johnson, & Dreifuerst, 2020; Dreifuerst, 2015).

While DML fosters higher order reasoning skills (Dreifuerst, 2015), what remains unknown is how DML debriefing supports students to build, apply, and retain nursing knowledge, which are fundamental building blocks for developing competence. The aim of this study, therefore, was to test the impact of a DML debriefing compared to customary debriefing on the knowledge acquisition, knowledge application and knowledge retention of baccalaureate nursing students following a simulation and debriefing focused on the care of a patient with a neurological condition.

Theoretical Framework

Mezirow's (1978) transformative learning theory and Schön's (1983) theory of reflection provide the theoretical framework that underpinned this research. Mezirow's (1978) theory explains how students use reflection during learning to develop a deeper understanding of concepts. The central themes of the theory revolve around the student experience while engaging in reflection on, and interpretation of new information, leading to learning (Schnepfleitner & Ferreira, 2021). In this framework, the students reflect on their experiences and develop new frames thereby learning to let go of 'taken-for-granted' assumptions and transforming their understanding. Critical reflection is a key component because analysis and interpretation of the experience results in the development of new meaning and learning (Mezirow, 1978; Schnepfleitner & Ferreira, 2021).

Mezirow's framework aligns well with simulation and DML debriefing. During debriefing, the debriefer guides the discussion through critical reflections towards transformation. Schön (1983) identified reflection that is 'thinking while doing' as reflection-in-action, recognized this quality in the reflective practitioner, and indicated that the opportunity for this type of reflection occurs within the simultaneous interchange of doing and thinking and can be represented by knowledge acquisition. Reflection-in-action represents decisions and judgments that occur in the moment as opposed to reflection-on-action, which is retrospective reflection (Schön, 1983) and can be represented by knowledge application. Moreover, connecting knowledge and action is the central component of reflection-in-action, particularly with students or novice nurses. Learning to view the situation or experience in a different way, and to learn from experience through deliberate thinking practice, is common at the reflection-in-action level (Dreifuerst, 2015; Schön, 1983). Reflection-beyond-action (Dreifuerst, 2009), the relationship between reflection and anticipation extends Schön's (1983) work and underpins the concept of knowledge application to a new experience. Therefore, both the transformative learning theory (Mezirow, 1978) and the theory of reflection (Schön, 1983) provide a foundation for the research design and hypotheses of this study exploring the impact of DML debriefing on knowledge acquisition, knowledge retention and knowledge application following a clinical experience using simulation.

Sample

A priori, the desired sample size was determined according to a power analysis using G*Power© (Faul, Erdfelder, Buchner, & Lang, 2009) with statistical independent and paired samples *t*-tests. The significance level was set at $p = .05$, the power at 0.95, and G*Power© estimated an effect size of 0.50 based on a large effect, requiring a sample size of 210 total participants with 105 participants per group. Because the study was only able to occur during a single semester, this sample size was not achieved in data collection. However, a post-hoc power analysis, set to the same power parameters as the a priori analysis, indicated that power was achieved when the mean scores of the groups were added into the analysis.

Following exempt determination by the Institutional Review Board, a convenience sample of 91 prelicensure nursing students was recruited from students in a traditional baccalaureate program in a Midwest university who were enrolled in a single semester in an adult health course. Eighty-two students consented to be included in the study. Participants assigned to the experimental group ($n = 45$) received DML debriefing after their simulation experience. The experimental group represented the student population in the program and consisted of 96% females ($n = 43$) and 4% males ($n = 2$). Most of participants ($n = 42$) identified as Caucasian (95%), 2% identified as Asian ($n = 1$), 2% as Hispanic ($n = 1$), and one declined to share this information. Ages ranged from 19 to 28 with a mean age of 22.18 years old. The control group ($n = 37$) received the customary unstructured debriefing used in that program after the simulation, which did not include formal training. The control consisted of 95% females ($n = 35$) and 5% males ($n = 2$). Most participants in this group (94%) were also Caucasian ($n = 33$), 3% were Black ($n = 2$), and 3% were Asian ($n = 2$). Participants in the control group ranged in age from 20 to 36 with a mean age of 22.89 years old. To participate in the study, students were asked to complete a pretest and two posttests after engaging in a simulation and debriefing scheduled according to their customary course activities.

Instruments

An extensive literature search did not reveal any existing instruments specific to measuring knowledge acquisition, retention, or application in adult health nursing or specific to neurological nursing care. Therefore, two instruments were developed and tested for use in this study. The first instrument (Pretest and Posttest 1) was based on the care of a patient with meningitis, and the second (Posttest 2) was based on the care of both a patient with meningitis and another with subarachnoid hemorrhage. The Pretest and Posttest 1 contained identical 15 multiple-choice items. Posttest 2 included the same test items as the Pretest and Posttest 1 with ten additional questions added that were related to a parallel case about subarachnoid hemorrhage, which is similar, but not identical to the care of a patient with meningitis. Test items addressed the clinical manifestations of meningitis including the clinical signs and symptom identification and associated nursing care, performing a neurological assessment, interpretation of pertinent lab values, pain management, patient safety, communication with a patient and family, and preventative measures to protect against contracting meningitis. Seven nursing experts reviewed the instruments, including three practicing neurological intensive care nurses, a practicing doctoral-prepared nurse practitioner, and three senior level nursing faculty members from a separate school of nursing.

Consensus on content validity was reached by establishing agreement among the experts regarding each test item. Content validity was established when all question components received at least 90% ($n = 6$) interrater agreement which occurred on the third review. Reliability was established for each instrument using the Intraclass Correlation Coefficient (ICC) which accounts for both the degree of correlation and agreement between the measures (Koo & Yi, 2016). The results of the two-way mixed effects ICC reliability analysis (ICC 0.650, upper 0.763, lower 0.494, *F* Test value 2.865, *df*₁ 1.65, *df*₂ 1.62 $p .000$) indicated a moderate level of reliability across all three measures. The instruments were further tested in a pilot study, using a convenience

sample of prelicensure nursing students ($n = 7$) from a different school of nursing to ensure the psychometric properties of the items prior to use in this study.

Methods

During this quasi-experimental pretest-posttest-posttest study, participants were assigned to the experimental or control group using number randomization. All participants completed a demographic survey and the pretest, then assumed their assigned roles for the simulation in small groups of six students. Each student participated in one simulation about the care of a patient with meningitis for a total of 120 minutes using an Evolve simulation scenario (Evolve, n.d.) modified using the National League of Nursing Simulation Design Template© (<http://www.nln.org/sirc/sirc-resources/sirc-tools-and-tips#simtemplate>). Each simulation experience took about 2 hours. Twenty-five minutes were allotted for the pretest and prebriefing, 20 minutes for the simulation, 55 minutes for debriefing, and 20 minutes for the first posttest.

Following the simulation, the experimental group participants ($n = 45$), were debriefed by the researcher, who had received extensive DML training, had attended a DML workshop, and actively used DML for debriefing. The control group participants ($n = 37$) were debriefed by course faculty assigned to the course who had not received any debriefing training, and did not follow a structured, or theoretically derived debriefing method. Immediately following the debriefing, all participants completed the first posttest. Approximately 30 days later, participants from both groups were given the second posttest. Figure 1 depicts the sequence of measurement throughout data collection.

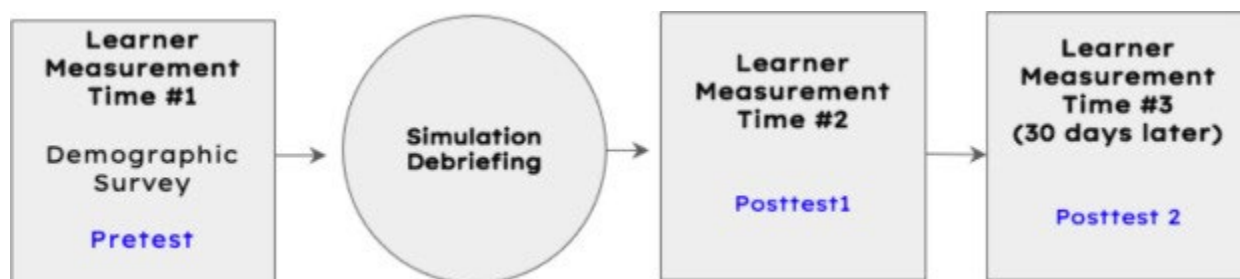


Figure 1. Survey Timeline.

Findings

Data analysis was performed using IBM SPSS Statistics 24™. The first research question “What is the impact of a simulation with DML debriefing compared to customary debriefing, on knowledge acquisition in the care of a patient with a neurological condition demonstrated by nursing students in a traditional BSN program?” was tested using a paired samples t -test to test for differences in means from the Pretest and the Posttest 1 for the experimental and control groups. An independent-samples t -test demonstrated that scores were significantly higher for the experimental group that received DML debriefing ($M = 12.02$, $SD = 1.31$) than for the control group that received customary debriefing ($M = 9.59$, $SD = 1.54$) for Posttest 1: $t(80) = -7.738$, $p < .001$, $d = 1.70$ with a large effect size $\eta^2 = 0.43$. Additionally, the change in knowledge between the Pretest and Posttest 1 mean scores were compared for the experimental and control groups, respectively. A paired-samples t -test demonstrated that scores were significantly higher for the experimental group at Posttest 1 ($M = 12.02$, $SD = 1.31$) than at the Pretest ($M = 9.84$, $SD = 1.57$): $t(44) = -8.416$, $p < .001$, $d = 1.26$. The effect size was large, $\eta^2 = 0.45$. However, the paired-samples t -test demonstrated that the control group scores were not significantly higher at Posttest 1 ($M = 9.59$, $SD = 1.54$) than at the Pretest ($M = 9.08$, $SD = 1.72$): $t(36) = -0.514$, $p = .040$.

These results suggest that DML debriefing influenced changes in knowledge scores for the experimental group, when compared to the control, on Posttest 1. Given that *t*-tests were used to answer Research Question 1, a *post-hoc* Bonferroni adjustment was used to determine the appropriate level of significance used to interpret each *t*-test for both the first and second research questions. The results of these tests remained significant after using the *post-hoc* Bonferroni adjustment.

The second research question, “What is the impact of a simulation with DML debriefing compared to customary debriefing on knowledge retention in the care of a patient with a neurological condition, demonstrated by nursing students in a traditional BSN program, 30 days after a simulation and debriefing?” first an independent-samples *t*-test was analyzed on the mean scores from Posttest 2. Findings indicated that student scores on Posttest 2 remained higher for the experimental group that received DML debriefing ($M = 12.04, SD = 1.61$) than for the control group that received customary debriefing ($M = 10.05, SD = 1.67$) at Posttest 2: $t(80) = -5.486, p < .001, d = 1.21$. The effect size was also large, $\eta^2 = 0.27$. Next, paired samples *t*-tests were conducted to assess the mean differences of knowledge retention from the Posttest 1 to the Posttest 2 for the experimental and control groups respectively.

The results of the paired-samples *t*-tests found that experimental group scores did not significantly increase from Posttest 1 ($M = 12.02, SD = 1.31$) to Posttest 2 ($M = 12.04, SD = 1.61$): $t(44) = -0.085, p = .93$. The paired-samples *t*-test also demonstrated that the control group scores did not significantly increase from Posttest 1 ($M = 9.59, SD = 1.54$) to Posttest 2 ($M = 10.05, SD = 1.67$): $t(36) = -1.392, p = .173$. Therefore, neither group improved their knowledge, however, they retained what they had learned from Posttest 1 to Posttest 2.

These findings indicate that groups’ scores essentially remained unchanged demonstrating that the knowledge that had been learned was retained without significant gain or loss. Given that a series of *t*-tests were used to answer Research Question 2, a *post-hoc* Bonferroni adjustment was used to determine the appropriate level of significance used to interpret each *t*-test. However, the findings remained unchanged after applying the Bonferroni adjustment. There was, however, a significant difference between the experimental and control groups’ total mean scores. Although both groups did not significantly change from Posttest 1 to Posttest 2, the experimental group scores started and remained higher.

The third research question asked, “What is the impact of a simulation with DML debriefing compared to customary debriefing, on knowledge application to a parallel patient scenario, demonstrated by nursing students in a traditional BSN program?” To assess this, the mean knowledge application scores from Posttest 2 for both the experimental and control groups were compared using an independent samples *t*-test, demonstrating that scores were significantly higher for the experimental group which received DML debriefing ($M = 8.51, SD = 1.27$) than for the control group that received customary debriefing ($M = 7.65, SD = 1.65$) for knowledge application: $t(80) = -2.669, p < .01, d = 0.58$ with a moderate effect size, $\eta^2 = 0.08$.

Conclusions

The purpose of this research was to compare the impact of DML debriefing with customary debriefing on knowledge acquisition, knowledge retention, and knowledge application among baccalaureate nursing students. While the use of theoretically derived and evidence based debriefing methods has been associated with positive knowledge learning outcomes (Johnson, 2019), this study demonstrated further empirical evidence of similar findings using different knowledge assessment instruments, adding to the growing body of research demonstrating the impact of DML debriefing on learning outcomes (Niu et al., 2021). In this study, DML debriefing influenced changes in knowledge acquisition and knowledge application for the experimental group when compared to the control. Additionally, DML debriefing yielded greater knowledge retention among students than an unstructured debriefing facilitated by educators who had not received formal debriefing.

Students who received a DML debriefing also demonstrated greater knowledge application to a similar patient scenario than students who did not receive the intervention. These findings support the strong recommendations in the new Healthcare Standard of Best Practice Professional Development (Watts et al., 2021) for ongoing training and assessment for educators who use simulation and debriefing in their teaching practice. Clearly, this study demonstrated the difference between students debriefed by a debriefer trained in a theory-based debriefing method and students who were debriefed by faculty who had not received training and did not use a structured, evidence-based method or process. The findings demonstrated in this study warrant further investigation since this study was limited to one single site.

Simulation with rigorous debriefing provides an opportunity for students to demonstrate competency behaviorally by providing care for a patient and cognitively through the discussion of their thinking that underpinned clinical decision-making, judgment, and reasoning. As nurse educators grapple with the current transition to competency-based education, assessing student knowledge applied to a contextually different but similar situation shows promise as a method of assessing one aspect of a student's competency. As the first domain of the new AACN Essentials (AACN, 2021), knowledge for nursing practice is foundational to student progression, therefore the findings of this study contribute evidence for the significance of DML debriefing to the achievement of this important competency.

References

- Aebersold, 2018. M. Aebersold. **Simulation-based learning: No longer a novelty in undergraduate education.** OJIN: The Online Journal of Issues in Nursing, 23 (2) (2018), 10.3912/OJIN.Vol23No02PPT39. 1–1
- Alexander et al., 2015. M. Alexander, C.F. Durham, J.I. Hooper, P.R. Jeffries, N. Goldman, K.S. Kesten, ..., C. Tillman. **NCSBN simulation guidelines for prelicensure nursing programs.** Journal of Nursing Regulation, 6 (3) (2015), pp. 39-42
- American Association of Colleges of Nursing [AACN] 2021. American Association of Colleges of Nursing [AACN] (2021). The Essentials: Core competencies for professional nursing education. <https://www.aacnnursing.org/Portals/42/AcademicNursing/pdf/Essentials-2021.pdf>
- Beauvais and Phillips, 2020. A.M. Beauvais, K.E. Phillips. **Incorporating future of nursing competencies into a clinical and simulation assessment tool: Validating the clinical simulation competency assessment tool.** Nursing Education Perspectives, 41 (5) (2020), pp. 280-284, 10.1097/01.Nep.0000000000000709
- Bradley et al., 2020. C.S. Bradley, B.K. Johnson, K.T. Dreifuerst. **Debriefing: A place for enthusiastic teaching and learning at a distance.** Clinical Simulation in Nursing (2020), 10.1016/j.ecns.2020.04.001
- Cheng et al., 2016. A. Cheng, K.J. Morse, J. Rudolph, A.A. Arab, J. Runnacles, W. Eppich. **Learner-centered debriefing for health care simulation education: Lessons for faculty development.** Simulation in Healthcare, 11 (1) (2016), pp. 32-40
- Cowen et al., 2018. K.J. Cowen, L.J. Hubbard, D.C. Hancock. **Expectations and experiences of nursing students in clinical courses: A descriptive study.** Nurse Education Today, 67 (2018), pp. 15-20, 10.1016/j.nedt.2018.04.024
- Decker et al., 2021. S. Decker, G. Alinier, S.B. Crawford, R.M. Gordon, D. Jenkins, C. Wilson. **Healthcare Simulation Standards of Best Practice™ The Debriefing Process.** Clinical Simulation in Nursing, 58 (2021), pp. 27-32, 10.1016/j.ecns.2021.08.011
- Dreifuerst, 2009. K.T. Dreifuerst. **The essentials of debriefing in simulation learning: A concept analysis.** Nursing Education Perspectives (National League for Nursing), 30 (2) (2009), pp. 109-114
- Dreifuerst, 2012. K.T. Dreifuerst. **Using Debriefing for Meaningful Learning to foster development of clinical reasoning in simulation.** Journal of Nursing Education, 51 (6) (2012), pp. 326-333, 10.3928/01484834-20120409-02
- Dreifuerst, 2015. K.T. Dreifuerst. **Getting started with Debriefing for Meaningful Learning.** Clinical Simulation in Nursing, 11 (5) (2015), pp. 268-275, 10.1016/j.ecns.2015.01.005

- Fang et al., 2021. Fang, D., Keyt, J., & McFadden, T. (2021). Special survey on vacant faculty positions for academic year 2020-2021. <https://www.aacnnursing.org/Portals/42/News/Surveys-Data/2020-Faculty-Vacancy-Report.pdf>
- Faul et al., 2009. F. Faul, E. Erdfelder, A. Buchner, A.G. Lang. **Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses.** Behavior Research Methods, 41 (2009), pp. 1149-1160, 10.3758/BRM.41.4.1149
- Forneris et al., 2015. S.G. Forneris, D.O. Neal, J. Tiffany, M.B. Kuehn, H.M. Meyer, L.M. Blazovich, ..., M. Smerillo. **Enhancing clinical reasoning through simulation debriefing: A multisite study.** Nursing Education Perspectives, 36 (5) (2015), pp. 304-310, 10.5480/15-1672
- Gillson and Cherian, 2019. S. Gillson, N. Cherian. **The importance of teaching cultural diversity in baccalaureate nursing education.** Journal of Cultural Diversity, 26 (3) (2019)
- Henry and West, 2019. D. Henry, D.C. West. **The clinical learning environment and workplace-based assessment.** Pediatric Clinics of North America, 66 (4) (2019), pp. 839-854, 10.1016/j.pcl.2019.03.010
- Johnson, 2019. B.K. Johnson. **Simulation observers learn the same as participants: The evidence.** Clinical Simulation in Nursing, 33 (2019), pp. 26-34, 10.1016/j.ecns.2019.04.006
- Koo and Li, 2016. T.K. Koo, M.Y. Li. **A guideline of selecting and reporting intraclass correlation coefficients for reliability research.** Journal of Chiropractic Medicine, 15 (2) (2016), pp. 155-163
- Lioce et al., 2020. L. Lioce, J. Lopreiato, D. Downing, T.P. Chang, J.M. Robertson, M. Anderson, ..., A.E. Spain. **Terminology and concepts working group. Healthcare simulation dictionary.** (2nd ed.), Agency for Healthcare Research and Quality (2020), 10.23970/simulationv2
- Mariani et al., 2013. B. Mariani, M.A. Cantrell, C. Meakim, P. Prieto, K.T. Dreifuerst. **Structured debriefing and students' clinical judgment abilities in simulation.** Clinical Simulation in Nursing, 9 (5) (2013), pp. e147-e155, 10.1016/j.ecns.2011.11.009
- Mezirow, 1978. J. Mezirow. **Perspective transformation.** Adult Education, 28 (2) (1978), pp. 100-110
- Niu et al., 2021. Y. Niu, T. Liu, K. Li, M. Sun, Y. Sun, X. Wang, X. Yang. **Effectiveness of simulation debriefing methods in nursing education: A systematic review and meta-analysis.** Nurse Education Today, 107 (2021), Article 105113, 10.1016/j.nedt.2021.105113
- O'Brien et al., 2019. A. O'Brien, K. McNeil, A. Dawson. **The student experience of clinical supervision across health disciplines: Perspectives and remedies to enhance clinical placement.** Nurse Education in Practice, 34 (2019), pp. 48-55, 10.1016/j.nepr.2018.11.006
- Schnepfleitner and Ferreira, 2021. F.M. Schnepfleitner, M.P. Ferreira. **Transformative learning theory: Is it time to add a fourth core element?** Journal of Educational Studies and Multidisciplinary Approaches, 1 (1) (2021), pp. 40-49, 10.51383/jesma.2021.9
- Schön, 1983. D.A. Schön. **The reflective practitioner.** Basic Books, New York (1983)
- Taylor et al., 2017. C. Taylor, L. Angel, L. Nyanga, C. Dickson. **The process and challenges of obtaining and sustaining clinical placements for nursing and allied health students.** Journal of Clinical Nursing, 26 (19-20) (2017), pp. 3099-3110, 10.1111/jocn.13658
- Van Wyngaarden et al., 2019. A. Van Wyngaarden, R. Leech, I. Coetzee. **Challenges nurse educators experience with development of student nurses' clinical reasoning skills.** Nurse Education in Practice, 40 (2019), Article 102623, 10.1016/j.nepr.2019.102623
- Watts, Hallmark, & Beroz, 2021. P.I. Watts, B.F. Hallmark, S. Beroz. **Professional Development for Simulation Education.** Annual Review of Nursing Research, 39 (1) (2021), pp. 201-221